

A. AMENDMENTS TO CLAIMS

Please cancel Claims 7, 22, 36, 51 and 54 and amend the claims as indicated hereinafter.

- 1 1. (CURRENTLY AMENDED) A method for automatically routing an integrated circuit, the
2 method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more integrated circuit
4 devices to be included in the integrated circuit;
5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated circuit
8 connection data, a set of one or more routing indicators that specify a set of one or
9 more preferable intermediate routing locations through which a routing path is to
10 be located to connect first and second integrated circuit devices from the set of
11 two or more integrated circuit devices;
12 identifying one or more obstacles that block the routing path;
13 determining one or more portions of the routing path to be ripped up and rerouted;
14 determining, based upon the integrated circuit layout data, the integrated circuit
15 connection data, the set of one or more routing indicators and the one or more
16 portions of the routing path to be ripped up and rerouted, the routing path between
17 the first and second integrated circuit devices, wherein the routing path satisfies
18 specified design criteria; and
19 ~~determining, based upon the integrated circuit layout data, the integrated circuit~~
20 ~~connection data and the set of one or more routing indicators, the routing path~~
21 ~~between the first and second integrated circuit devices, wherein the routing path~~
22 ~~satisfies specified design criteria; and~~

23 updating the integrated circuit layout data to generate updated integrated circuit layout
24 data that reflects the routing path between the first and second integrated circuit
25 devices.

1 2. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path includes determining, based upon the integrated circuit layout data, the
3 integrated circuit connection data, the set of one or more routing indicators, the one or
4 more portions of the routing path to be ripped up and rerouted, bias direction criteria and
5 straying limit criteria, the routing path between the first and second integrated circuit
6 devices, wherein the bias direction criteria specifies a preferred routing direction for a
7 routing path between first and second integrated circuit devices from the set of two or
8 more integrated circuit devices and the straying limit criteria defines a routing region in
9 which the routing path between the first and second integrated circuit devices may be
10 placed.

1 3. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining, based upon the integrated circuit layout data, the integrated circuit
5 connection data and the one or more obstacles, one or more additional routing
6 indicators that specify one or more preferable routing locations through which the
7 routing path is to be located to avoid the one or more obstacles, and
8 determining, based upon the integrated circuit layout data, the integrated circuit
9 connection data, the set of one or more routing ~~indicators and~~ indicators, the one
10 or more additional routing ~~indicators, indicators and the one or more portions of~~
11 the routing path to be ripped up and rerouted, the routing path between the first
12 and second integrated circuit devices.

1 4. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path;~~
4 changing specified straying limit criteria that defines a routing region in which the
5 routing path between the first and second integrated circuit devices may be placed
6 to generate changed specified straying limit criteria that defines a modified
7 routing region, and
8 determining, based upon the integrated circuit layout data, the integrated circuit
9 connection data, the set of one or more routing ~~indicators~~indicators, the one or
10 more portions of the routing path to be ripped up and rerouted and the changed
11 specified straying limit criteria, the routing path between the first and second
12 integrated circuit devices.

1 5. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path;~~
4 determining a set of one or more layer changes to allow the routing path to avoid the one
5 more obstacles, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the set of one
9 or more layer changes, the routing path between the first and second integrated
10 circuit devices.

1 6. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path;~~

4 determining a set of one or more bends to be included in the routing path to avoid the one
5 more obstacles, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the set of one
9 or more bends, the routing path between the first and second integrated circuit
10 devices.

1 7. (CANCELED)

1 8. (CURRENTLY AMENDED) The method as recited in ~~Claim 7~~, Claim 1, wherein
2 determining the routing path between the first and second integrated circuit devices
3 further includes
4 determining one or more portions of one or more other routing paths to be ripped up and
5 rerouted, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators, the one or more
8 portions of the routing path to be ripped up and rerouted and the one or more
9 portions of the one or more other routing paths to be ripped up and rerouted, the
10 routing path between the first and second integrated circuit devices.

1 9. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices further includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining one or more portions of one or more other routing paths to be ripped up and
5 rerouted, and

6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the one or
9 more portions of the one or more other routing paths to be ripped up and rerouted,
10 the routing path between the first and second integrated circuit devices.

1 10. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes determining
3 the routing path from the second integrated circuit device to the first integrated circuit
4 device.
5 ~~identifying one or more obstacles that block the routing path, and~~
6 ~~determining, based upon the integrated circuit layout data, the integrated circuit~~
7 ~~connection data and the set of one or more routing indicators, the routing path~~
8 ~~between the first and second integrated circuit devices, wherein the routing path is~~
9 ~~routed from the second integrated circuit device to the first integrated circuit~~
10 ~~device.~~

1 11. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining one or more locations to employ corner clipping to provide additional space
5 for the routing path, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the one or
9 more locations to employ corner clipping, the routing path between the first and
10 second integrated circuit devices.

1 12. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining one or more integrated circuit layout objects to be moved to provide
5 additional space for the routing path, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and moving the one
9 or more integrated circuit layout objects, the routing path between the first and
10 second integrated circuit devices.

1 13. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 examining data that indicates whether changes can be made to one or more layout objects
4 defined by the integrated circuit layout data to accommodate the routing of the
5 routing path, and
6 if the data indicates that changes can be made to the one or more layout objects defined
7 by the integrated circuit layout data to accommodate the routing of the routing
8 path, then
9 making one or more changes to the one or more layout objects defined by the
10 integrated circuit layout data, and
11 determining, based upon the integrated circuit layout data, the integrated circuit
12 connection data, the set of one or more routing ~~indicators~~indicators, the
13 one or more portions of the routing path to be ripped up and rerouted and
14 the one or more changes made to the one or more layout objects, the
15 routing path between the first and second integrated circuit devices.

1 14. (ORIGINAL) The method as recited in Claim 13, further comprising generating data that
2 specifies the one or more changes made to the one or more layout objects.

1 15. (CURRENTLY AMENDED) The method as recited in Claim 1, wherein determining the
2 routing path between the first and second integrated circuit devices includes
3 determining a set of one or more routing targets to which the routing path is to be routed,
4 and
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data, the set of one or more routing indicators ~~indicators, the one or~~
7 more portions of the routing path to be ripped up and rerouted and the set of one
8 or more routing targets, the routing path between the first and second integrated
9 circuit devices.

1 16. (CURRENTLY AMENDED) A method for automatically routing an integrated circuit, the
2 method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more integrated circuit
4 devices to be included in the integrated circuit;
5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated circuit
8 connection data, a set of one or more routing indicators that specify a set of one or
9 more preferable intermediate routing locations through which a routing path is to
10 be located to connect first and second integrated circuit devices from the set of
11 two or more integrated circuit devices; and
12 determining, based upon the integrated circuit layout data, the integrated circuit
13 connection data and the set of one or more routing indicators, the routing path

14 between the first and second integrated circuit devices, wherein the routing path
15 satisfies specified design criteria, and The method as recited in Claim 1, wherein
16 determining the routing path between the first and second integrated circuit
17 devices includes performing one or more design rule checks on one or more
18 portions of the routing path as the routing path is being determined.

1 17. (ORIGINAL) The method as recited in Claim 16, further comprising performing a design
2 rule check on the updated integrated circuit layout data, wherein the design rule check
3 does not check one or more layout objects previously checked during determination of
4 the routing path.

1 18. (CURRENTLY AMENDED) A method for automatically routing an integrated circuit, the
2 method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more integrated circuit
4 devices to be included in the integrated circuit;
5 receiving integrated circuit connection data that specifies one or more electrical
6 connections to be made between the integrated circuit devices;
7 determining, based upon the integrated circuit layout data and the integrated circuit
8 connection data, a set of one or more routing indicators that specify a set of one or
9 more preferable intermediate routing locations through which a routing path is to
10 be located to connect first and second integrated circuit devices from the set of
11 two or more integrated circuit devices; and
12 determining, based upon the integrated circuit layout data, the integrated circuit
13 connection data and the set of one or more routing indicators, the routing path
14 between the first and second integrated circuit devices, wherein the routing path
15 satisfies specified design criteria, and The method as recited in Claim 1, wherein

16 determining the routing path between the first and second integrated circuit
17 devices includes
18 extending the routing path a specified amount to generate an extended portion of
19 the routing path, and
20 selectively performing a design rule check on only the extended portion of the
21 routing path.

1 19. (ORIGINAL) The method as recited in Claim 1, wherein all attachment and bend angles
2 defined by the updated integrated circuit layout data are multiples of ninety degrees.

1 20. (ORIGINAL) The method as recited in Claim 1, wherein one or more attachment or bend
2 angles defined by the updated integrated circuit layout data are multiples of other than
3 ninety degrees.

1 21. (PREVIOUSLY PRESENTED) A method for automatically verifying an integrated
2 circuit layout, the method comprising the computer-implemented steps of:
3 receiving integrated circuit layout data that defines a set of two or more layout objects
4 contained in the integrated circuit layout;
5 performing a first design rule check on a layout object from the set of two or more layout
6 objects by evaluating the layout object against specified design criteria;
7 changing one or more values defined by the specified design criteria to generate updated
8 specified design criteria, wherein the changing of the one or more values is
9 performed after a specified amount of time has elapsed and is made with respect
10 to either the layout object or one or more other layout objects from the set of two
11 or more layout objects; and
12 performing a second design rule check on the layout object by evaluating the layout
13 object against the updated specified design criteria.

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1 22. (CANCELED)

1 23. (ORIGINAL) A method for automatically routing an integrated circuit, the method

2 comprising the computer-implemented steps of:

3 receiving integrated circuit layout data that defines a set of two or more integrated circuit

4 devices to be included in the integrated circuit;

5 receiving integrated circuit connection data that specifies one or more electrical

6 connections to be made between the integrated circuit devices;

7 determining, based upon the integrated circuit layout data and the integrated circuit

8 connection data, a routing path between first and second integrated circuit devices

9 that satisfies specified design criteria, wherein determining the routing path

10 between the first and second integrated circuit devices includes

11 determining whether the distance to be routed for a portion of the routing path

12 exceeds a specified distance, and

13 if the distance to be routed for the portion of the routing path does not exceed the

14 specified distance, then routing the portion of the routing path in a single

15 step; and

16 updating the integrated circuit layout data to generate updated integrated circuit layout

17 data that reflects the routing path between the first and second integrated circuit

18 devices.

1 24. (CURRENTLY AMENDED) A computer-readable medium carrying one or more

2 sequences of one or more instructions for automatically routing an integrated circuit, the one

3 or more sequences of one or more instructions including instructions which, when executed

4 by one or more processors, cause the one or more processors to perform the steps of:

5 receiving integrated circuit layout data that defines a set of two or more integrated circuit
6 devices to be included in the integrated circuit;
7 receiving integrated circuit connection data that specifies one or more electrical
8 connections to be made between the integrated circuit devices;
9 determining, based upon the integrated circuit layout data and the integrated circuit
10 connection data, a set of one or more routing indicators that specify a set of one or
11 more preferable intermediate routing locations through which a routing path is to
12 be located to connect first and second integrated circuit devices from the set of
13 two or more integrated circuit devices;
14 identifying one or more obstacles that block the routing path;
15 determining one or more portions of the routing path to be ripped up and rerouted;
16 determining, based upon the integrated circuit layout data, the integrated circuit
17 connection data, the set of one or more routing indicators and the one or more
18 portions of the routing path to be ripped up and rerouted, the routing path between
19 the first and second integrated circuit devices, wherein the routing path satisfies
20 specified design criteria; and
21 ~~determining, based upon the integrated circuit layout data, the integrated circuit~~
22 ~~connection data and the set of one or more routing indicators, the routing path~~
23 ~~between the first and second integrated circuit devices, wherein the routing path~~
24 ~~satisfies specified design criteria; and~~
25 updating the integrated circuit layout data to generate updated integrated circuit layout
26 data that reflects the routing path between the first and second integrated circuit
27 devices.

1 25. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path includes determining, based upon the integrated
3 circuit layout data, the integrated circuit connection data, the set of one or more routing

4 indicators, the one or more portions of the routing path to be ripped up and rerouted, bias
5 direction criteria and straying limit criteria, the routing path between the first and second
6 integrated circuit devices, wherein the bias direction criteria specifies a preferred routing
7 direction for a routing path between first and second integrated circuit devices from the
8 set of two or more integrated circuit devices and the straying limit criteria defines a
9 routing region in which the routing path between the first and second integrated circuit
10 devices may be placed.

1 26. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data and the one or more obstacles, one or more additional routing
7 indicators that specify one or more preferable routing locations through which the
8 routing path is to be located to avoid the one or more obstacles, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing ~~indicators~~ and indicators, the one
11 or more additional routing ~~indicators,~~ indicators and the one or more portions of
12 the routing path to be ripped up and rerouted, the routing path between the first
13 and second integrated circuit devices.

1 27. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~

5 changing specified straying limit criteria that defines a routing region in which the
6 routing path between the first and second integrated circuit devices may be placed
7 to generate changed specified straying limit criteria that defines a modified
8 routing region, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing ~~indicators~~indicators, the one or
11 more portions of the routing path to be ripped up and rerouted and the changed
12 specified straying limit criteria, the routing path between the first and second
13 integrated circuit devices.

1 28. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining a set of one or more layer changes to allow the routing path to avoid the one
6 more obstacles, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and the set of one
10 or more layer changes, the routing path between the first and second integrated
11 circuit devices.

1 29. (CURRENTLY AMENDED) A system for automatically routing an integrated circuit, the
2 system comprising:
3 a data storage mechanism having stored therein

4 integrated circuit layout data that defines a set of two or more integrated circuit
5 devices to be included in the integrated circuit, and
6 integrated circuit connection data that specifies one or more electrical connections
7 to be made between the integrated circuit devices; and
8 a routing mechanism communicatively coupled to the data storage mechanism, the
9 routing mechanism being configured to
10 determine, based upon the integrated circuit layout data and the integrated circuit
11 connection data, a set of one or more routing indicators that specify a set
12 of one or more preferable intermediate routing locations through which a
13 routing path is to be located to connect first and second integrated circuit
14 devices from the set of two or more integrated circuit devices,
15 identify one or more obstacles that block the routing path;
16 determine one or more portions of the routing path to be ripped up and rerouted;
17 determine, based upon the integrated circuit layout data, the integrated circuit
18 connection data, the set of one or more routing indicators and the one or
19 more portions of the routing path to be ripped up and rerouted, the routing
20 path between the first and second integrated circuit devices, wherein the
21 routing path satisfies specified design criteria; and
22 ~~determine, based upon the integrated circuit layout data, the integrated circuit~~
23 ~~connection data and the set of one or more routing indicators, the routing~~
24 ~~path between the first and second integrated circuit devices, wherein the~~
25 ~~routing path satisfies specified design criteria, and~~
26 update the integrated circuit layout data to generate updated integrated circuit
27 layout data that reflects the routing path between the first and second
28 integrated circuit devices.

1 30. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein the routing
2 mechanism is further configured to determine the routing path by determining, based
3 upon the integrated circuit layout data, the integrated circuit connection data, the set of
4 one or more routing indicators, the one or more portions of the routing path to be ripped
5 up and rerouted, bias direction criteria and straying limit criteria, the routing path
6 between the first and second integrated circuit devices, wherein the bias direction criteria
7 specifies a preferred routing direction for a routing path between first and second
8 integrated circuit devices from the set of two or more integrated circuit devices and the
9 straying limit criteria defines a routing region in which the routing path between the first
10 and second integrated circuit devices may be placed.

1 31. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein the routing
2 mechanism is further configured to determine the routing path between the first and
3 second integrated circuit devices by
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data and the one or more obstacles, one or more additional routing
7 indicators that specify one or more preferable routing locations through which the
8 routing path is to be located to avoid the one or more obstacles, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing ~~indicators and~~ indicators, the one
11 or more additional routing ~~indicators, indicators and~~ the one or more portions of
12 the routing path to be ripped up and rerouted, the routing path between the first
13 and second integrated circuit devices.

1 32. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein the routing
2 mechanism is further configured to determine the routing path between the first and
3 second integrated circuit devices by
4 ~~identifying one or more obstacles that block the routing path,~~
5 changing specified straying limit criteria that defines a routing region in which the
6 routing path between the first and second integrated circuit devices may be placed
7 to generate changed specified straying limit criteria that defines a modified
8 routing region, and
9 determining, based upon the integrated circuit layout data, the integrated circuit
10 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
11 more portions of the routing path to be ripped up and rerouted and the changed
12 specified straying limit criteria, the routing path between the first and second
13 integrated circuit devices.

1 33. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein routing
2 mechanism is further configured to determine the routing path between the first and
3 second integrated circuit devices by
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining a set of one or more layer changes to allow the routing path to avoid the one
6 more obstacles, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and the set of one
10 or more layer changes, the routing path between the first and second integrated
11 circuit devices.

- 1 34. (PREVIOUSLY PRESENTED) The method as recited in Claim 1, wherein each routing
2 indicator from the set of one or more routing indicators further specifies a routing
3 direction for the routing path.
- 1 35. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining a set of one or more bends to be included in the routing path to avoid the one
6 more obstacles, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and the set of one
10 or more bends, the routing path between the first and second integrated circuit
11 devices.
- 1 36. (CANCELED)
- 1 37. (CURRENTLY AMENDED) The computer-readable medium as recited in ~~Claim 36,~~
2 Claim 24, wherein determining the routing path between the first and second integrated
3 circuit devices further includes
4 determining one or more portions of one or more other routing paths to be ripped up and
5 rerouted, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators, the one or more
8 portions of the routing path to be ripped up and rerouted and the one or more

9 portions of the one or more other routing paths to be ripped up and rerouted, the
10 routing path between the first and second integrated circuit devices.

1 38. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices further includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining one or more portions of one or more other routing paths to be ripped up and
6 rerouted, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and the one or
10 more portions of the one or more other routing paths to be ripped up and rerouted,
11 the routing path between the first and second integrated circuit devices.

1 39. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes determining the routing path from the second integrated circuit device to
4 the first integrated circuit device.
5 ~~identifying one or more obstacles that block the routing path, and~~
6 ~~determining, based upon the integrated circuit layout data, the integrated circuit~~
7 ~~connection data and the set of one or more routing indicators, the routing path~~
8 ~~between the first and second integrated circuit devices, wherein the routing path is~~
9 ~~routed from the second integrated circuit device to the first integrated circuit~~
10 ~~device.~~

1 40. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining one or more locations to employ corner clipping to provide additional space
6 for the routing path, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and the one or
10 more locations to employ corner clipping, the routing path between the first and
11 second integrated circuit devices.

1 41. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 ~~identifying one or more obstacles that block the routing path,~~
5 determining one or more integrated circuit layout objects to be moved to provide
6 additional space for the routing path, and
7 determining, based upon the integrated circuit layout data, the integrated circuit
8 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
9 more portions of the routing path to be ripped up and rerouted and moving the one
10 or more integrated circuit layout objects, the routing path between the first and
11 second integrated circuit devices.

1 42. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes

4 examining data that indicates whether changes can be made to one or more layout objects
5 defined by the integrated circuit layout data to accommodate the routing of the
6 routing path, and
7 if the data indicates that changes can be made to the one or more layout objects defined
8 by the integrated circuit layout data to accommodate the routing of the routing
9 path, then
10 making one or more changes to the one or more layout objects defined by the
11 integrated circuit layout data, and
12 determining, based upon the integrated circuit layout data, the integrated circuit
13 connection data, the set of one or more routing ~~indicators~~ indicators, the
14 one or more portions of the routing path to be ripped up and rerouted and
15 the one or more changes made to the one or more layout objects, the
16 routing path between the first and second integrated circuit devices.

1 43. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 42,
2 further comprising one or more additional instructions which, when executed by the one
3 or more processors, cause the one or more processors to generate data that specifies the
4 one or more changes made to the one or more layout objects.

1 44. (CURRENTLY AMENDED) The computer-readable medium as recited in Claim 24,
2 wherein determining the routing path between the first and second integrated circuit
3 devices includes
4 determining a set of one or more routing targets to which the routing path is to be routed,
5 and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the set of one

9 or more routing targets, the routing path between the first and second integrated
10 circuit devices.

1 45. (CURRENTLY AMENDED) A computer-readable medium carrying one or more
2 sequences of one or more instructions for automatically routing an integrated circuit, the one
3 or more sequences of one or more instructions including instructions which, when executed
4 by one or more processors, cause the one or more processors to perform the steps of:
5 receiving integrated circuit layout data that defines a set of two or more integrated circuit
6 devices to be included in the integrated circuit;
7 receiving integrated circuit connection data that specifies one or more electrical
8 connections to be made between the integrated circuit devices;
9 determining, based upon the integrated circuit layout data and the integrated circuit
10 connection data, a set of one or more routing indicators that specify a set of one or
11 more preferable intermediate routing locations through which a routing path is to
12 be located to connect first and second integrated circuit devices from the set of
13 two or more integrated circuit devices; and
14 determining, based upon the integrated circuit layout data, the integrated circuit
15 connection data and the set of one or more routing indicators, the routing path
16 between the first and second integrated circuit devices, wherein the routing path
17 satisfies specified design criteria, and ~~The computer-readable medium as recited~~
18 ~~in Claim 24, wherein determining the routing path between the first and second~~
19 ~~integrated circuit devices includes performing one or more design rule checks on~~
20 ~~one or more portions of the routing path as the routing path is being determined.~~

1 46. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 45,
2 further comprising one or more additional instructions which, when executed by the one

3 or more processors, cause the one or more processors to perform a design rule check on
4 the updated integrated circuit layout data, wherein the design rule check does not check
5 one or more layout objects previously checked during determination of the routing path.

1 47. (CURRENTLY AMENDED) A computer-readable medium carrying one or more
2 sequences of one or more instructions for automatically routing an integrated circuit, the one
3 or more sequences of one or more instructions including instructions which, when executed
4 by one or more processors, cause the one or more processors to perform the steps of:
5 receiving integrated circuit layout data that defines a set of two or more integrated circuit
6 devices to be included in the integrated circuit;
7 receiving integrated circuit connection data that specifies one or more electrical
8 connections to be made between the integrated circuit devices;
9 determining, based upon the integrated circuit layout data and the integrated circuit
10 connection data, a set of one or more routing indicators that specify a set of one or
11 more preferable intermediate routing locations through which a routing path is to
12 be located to connect first and second integrated circuit devices from the set of
13 two or more integrated circuit devices; and
14 determining, based upon the integrated circuit layout data, the integrated circuit
15 connection data and the set of one or more routing indicators, the routing path
16 between the first and second integrated circuit devices, wherein the routing path
17 satisfies specified design criteria, and ~~The computer-readable medium as recited~~
18 ~~in Claim 24,~~ wherein determining the routing path between the first and second
19 integrated circuit devices includes
20 extending the routing path a specified amount to generate an extended portion of
21 the routing path, and

22 selectively performing a design rule check on only the extended portion of the
23 routing path.

1 48. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 24,
2 wherein all attachment and bend angles defined by the updated integrated circuit layout
3 data are multiples of ninety degrees.

1 49. (PREVIOUSLY PRESENTED) The computer-readable medium as recited in Claim 24,
2 wherein one or more attachment or bend angles defined by the updated integrated circuit
3 layout data are multiples of other than ninety degrees.

1 50. (PREVIOUSLY PRESENTED) A computer-readable medium carrying one or more
2 sequences of one or more instructions for automatically verifying an integrated circuit
3 layout, the one or more sequences of one or more instructions including instructions
4 which, when executed by one or more processors, cause the one or more processors to
5 perform the steps of:
6 receiving integrated circuit layout data that defines a set of two or more layout objects
7 contained in the integrated circuit layout;
8 performing a first design rule check on a layout object from the set of two or more layout
9 objects by evaluating the layout object against specified design criteria;
10 changing one or more values defined by the specified design criteria to generate updated
11 specified design criteria, wherein the changing of the one or more values is
12 performed after a specified amount of time has elapsed and is made with respect
13 to either the layout object or one or more other layout objects from the set of two
14 or more layout objects; and
15 performing a second design rule check on the layout object by evaluating the layout
16 object against the updated specified design criteria.

1 51. (CANCELED)

1 52. (PREVIOUSLY PRESENTED) A computer-readable medium carrying one or more
2 sequences of one or more instructions for automatically routing an integrated circuit, the one
3 or more sequences of one or more instructions including instructions which, when executed
4 by one or more processors, cause the one or more processors to perform the steps of:

5 receiving integrated circuit layout data that defines a set of two or more integrated circuit
6 devices to be included in the integrated circuit;
7 receiving integrated circuit connection data that specifies one or more electrical
8 connections to be made between the integrated circuit devices;
9 determining, based upon the integrated circuit layout data and the integrated circuit
10 connection data, a routing path between first and second integrated circuit devices
11 that satisfies specified design criteria, wherein determining the routing path
12 between the first and second integrated circuit devices includes
13 determining whether the distance to be routed for a portion of the routing path
14 exceeds a specified distance, and
15 if the distance to be routed for the portion of the routing path does not exceed the
16 specified distance, then routing the portion of the routing path in a single
17 step; and
18 updating the integrated circuit layout data to generate updated integrated circuit layout
19 data that reflects the routing path between the first and second integrated circuit
20 devices.

1 53. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining
2 the routing path between the first and second integrated circuit devices includes

3 ~~identifying one or more obstacles that block the routing path,~~
4 determining a set of one or more bends to be included in the routing path to avoid the one
5 more obstacles, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and the set of one
9 or more bends, the routing path between the first and second integrated circuit
10 devices.

1 54. (CANCELED)

1 55. (CURRENTLY AMENDED) The system as recited in ~~Claim 54~~, Claim 29, wherein
2 determining the routing path between the first and second integrated circuit devices
3 further includes
4 determining one or more portions of one or more other routing paths to be ripped up and
5 rerouted, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing indicators, the one or more
8 portions of the routing path to be ripped up and rerouted and the one or more
9 portions of the one or more other routing paths to be ripped up and rerouted, the
10 routing path between the first and second integrated circuit devices.

1 56. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining
2 the routing path between the first and second integrated circuit devices further includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining one or more portions of one or more other routing paths to be ripped up and
5 rerouted, and

determining, based upon the integrated circuit layout data, the integrated circuit connection data, the set of one or more routing ~~indicators~~ indicators, the one or more portions of the routing path to be ripped up and rerouted and the one or more portions of the one or more other routing paths to be ripped up and rerouted, the routing path between the first and second integrated circuit devices.

57. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining the routing path between the first and second integrated circuit devices includes determining the routing path from the second integrated circuit device to the first integrated circuit device. ~~identifying one or more obstacles that block the routing path, and determining, based upon the integrated circuit layout data, the integrated circuit connection data and the set of one or more routing indicators, the routing path between the first and second integrated circuit devices, wherein the routing path is routed from the second integrated circuit device to the first integrated circuit device.~~

58. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining the routing path between the first and second integrated circuit devices includes ~~identifying one or more obstacles that block the routing path,~~ determining one or more locations to employ corner clipping to provide additional space for the routing path, and determining, based upon the integrated circuit layout data, the integrated circuit connection data, the set of one or more routing ~~indicators~~ indicators, the one or more portions of the routing path to be ripped up and rerouted and the one or more locations to employ corner clipping, the routing path between the first and second integrated circuit devices.

1 59. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining
2 the routing path between the first and second integrated circuit devices includes
3 ~~identifying one or more obstacles that block the routing path,~~
4 determining one or more integrated circuit layout objects to be moved to provide
5 additional space for the routing path, and
6 determining, based upon the integrated circuit layout data, the integrated circuit
7 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
8 more portions of the routing path to be ripped up and rerouted and moving the one
9 or more integrated circuit layout objects, the routing path between the first and
10 second integrated circuit devices.

1 60. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining
2 the routing path between the first and second integrated circuit devices includes
3 examining data that indicates whether changes can be made to one or more layout objects
4 defined by the integrated circuit layout data to accommodate the routing of the
5 routing path, and
6 if the data indicates that changes can be made to the one or more layout objects defined
7 by the integrated circuit layout data to accommodate the routing of the routing
8 path, then
9 making one or more changes to the one or more layout objects defined by the
10 integrated circuit layout data, and
11 determining, based upon the integrated circuit layout data, the integrated circuit
12 connection data, the set of one or more routing ~~indicators~~ indicators, the
13 one or more portions of the routing path to be ripped up and rerouted and
14 the one or more changes made to the one or more layout objects, the
15 routing path between the first and second integrated circuit devices.

1 61. (PREVIOUSLY PRESENTED) The system as recited in Claim 60, wherein the routing
2 mechanism is further configured to generate data that specifies the one or more changes
3 made to the one or more layout objects.

1 62. (CURRENTLY AMENDED) The system as recited in Claim 29, wherein determining
2 the routing path between the first and second integrated circuit devices includes
3 determining a set of one or more routing targets to which the routing path is to be routed,
4 and
5 determining, based upon the integrated circuit layout data, the integrated circuit
6 connection data, the set of one or more routing ~~indicators~~ indicators, the one or
7 more portions of the routing path to be ripped up and rerouted and the set of one
8 or more routing targets, the routing path between the first and second integrated
9 circuit devices.

1 63. (CURRENTLY AMENDED) A system for automatically routing an integrated circuit, the
2 system comprising:
3 a data storage mechanism having stored therein
4 integrated circuit layout data that defines a set of two or more integrated circuit
5 devices to be included in the integrated circuit, and
6 integrated circuit connection data that specifies one or more electrical connections
7 to be made between the integrated circuit devices; and
8 a routing mechanism communicatively coupled to the data storage mechanism, the
9 routing mechanism being configured to
10 determine, based upon the integrated circuit layout data and the integrated circuit
11 connection data, a set of one or more routing indicators that specify a set
12 of one or more preferable intermediate routing locations through which a

13 routing path is to be located to connect first and second integrated circuit
14 devices from the set of two or more integrated circuit devices,
15 determine, based upon the integrated circuit layout data, the integrated circuit
16 connection data and the set of one or more routing indicators, the routing
17 path between the first and second integrated circuit devices, wherein the
18 routing path satisfies specified design criteria, and ~~The system as recited in~~
19 ~~Claim 29,~~ wherein determining the routing path between the first and
20 second integrated circuit devices includes performing one or more design
21 rule checks on one or more portions of the routing path as the routing path
22 is being ~~determined;~~ determined; and
23 update the integrated circuit layout data to generate updated integrated circuit
24 layout data that reflects the routing path between the first and second
25 integrated circuit devices.

1 64. (PREVIOUSLY PRESENTED) The system as recited in Claim 63, wherein the routing
2 mechanism is further configured to perform a design rule check on the updated integrated
3 circuit layout data, wherein the design rule check does not check one or more layout
4 objects previously checked during determination of the routing path.

1 65. (CURRENTLY AMENDED) A system for automatically routing an integrated circuit, the
2 system comprising:
3 a data storage mechanism having stored therein
4 integrated circuit layout data that defines a set of two or more integrated circuit
5 devices to be included in the integrated circuit, and
6 integrated circuit connection data that specifies one or more electrical connections
7 to be made between the integrated circuit devices; and

8 a routing mechanism communicatively coupled to the data storage mechanism, the
9 routing mechanism being configured to
10 determine, based upon the integrated circuit layout data and the integrated circuit
11 connection data, a set of one or more routing indicators that specify a set
12 of one or more preferable intermediate routing locations through which a
13 routing path is to be located to connect first and second integrated circuit
14 devices from the set of two or more integrated circuit devices,
15 determine, based upon the integrated circuit layout data, the integrated circuit
16 connection data and the set of one or more routing indicators, the routing
17 path between the first and second integrated circuit devices, wherein the
18 routing path satisfies specified design criteria, and The system as recited in
19 Claim 29, wherein determining the routing path between the first and
20 second integrated circuit devices includes
21 extending the routing path a specified amount to generate an extended
22 portion of the routing path, and
23 selectively performing a design rule check on only the extended portion of
24 the routing path; path; and
25 update the integrated circuit layout data to generate updated integrated circuit
26 layout data that reflects the routing path between the first and second
27 integrated circuit devices.

- 1 66. (PREVIOUSLY PRESENTED) The system as recited in Claim 29, wherein all
2 attachment and bend angles defined by the updated integrated circuit layout data are
3 multiples of ninety degrees.

- 1 67. (PREVIOUSLY PRESENTED) The system as recited in Claim 29, wherein one or more
- 2 attachment or bend angles defined by the updated integrated circuit layout data are
- 3 multiples of other than ninety degrees.